OUTLOOK *for the* BLIND

and THE TEACHERS FORUM

Vol. 43 December, 1949 No. 10

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AT THE OXFORD CONFERENCE

OUTLOOK for the BLIND

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VOL. 43 DECEMBER, 1949 NO. 10

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AT THE OXFORD CONFERENCE

WHAT MENTAL TESTS SHALL WE USE?

SAMUEL P. HAYES, PH.D.

THE GREAT PUBLIC INTEREST in mental tests, and their use by the tens of thousands in schools, vocational guidance centers and the employment offices of major industries, with publishing houses turning from the production of books to the printing and distribution of tests, is almost a major characteristic of the present decade. Of course there is nothing magic about tests, even though the advertisements sometimes make claims similar to those used to sell patent medicines, but public acceptance of the printed page at its face value often leads to the purchase and use of tests unsuited to the situation. Tests must be bought with discrimination and used with scientific care, and the results must be interpreted with caution. This series of articles is an attempt to answer for the whole group of people interested in testing the blind, the questions constantly raised in correspondence —what is the best test for me to use for this or that group, in this or that subject, for this or that purpose?

Fortunately, we have in the series of *Mental Measurements Yearbooks*, edited by Dr. Oscar Krisen Buros (1, 2), a super-encyclopedia of tests and books about tests, in which one may find descriptions of practically all the mental tests worth mentioning, with abstracts from critical reviews which tell us what experts in testing think about each test—what are its strong and weak points, how well it has been constructed, what statistical evidence of its reliability and validity have been presented, and under what conditions and in what situations it may be expected to measure the mental functions in which we are interested. Convenient indices make it possible to find the discussion of any test of which we know the name or the author; and if we are not familiar either with the name or the author but are merely hunting for some suitable test in some subject, or for the measure-

Dr. Samuel P. Hayes, head of the department of personnel and research at Perkins Institution and Massachusetts School for the Blind, needs no introduction.

ment of some ability or trait, we may skim through the whole section on Achievement Batteries, Character and Personality, Intelligence, English, Mathematics, Vocations, etc., as our interest may dictate, and pick out the test which seems best to meet our need.

We shall use this valuable series of yearbooks as a primary source of information and criticism, selecting from the tests receiving favorable reviews, those which could be adapted for use with the blind without major distortions in content, method of giving or scoring and interpretation.

I. Interest inventories and questionnaires

The importance and value of measurements of interest may be appreciated from the following quotation from Bingham's (3) *Aptitudes and Aptitude Testing*, page 60 ff. " 'If there were an instrument by which we could measure desire, we could foretell achievement.' So, at least, mused the professor in Willa Cather's novel, *The Professor's House.* He was thinking of the thousands of young men who had heard his lectures, and of the single student, no brighter than many of the others, who later had accomplished something really exceptional." Unfortunately, Bingham continues, "there are as yet no convenient instruments for measuring the strength and persistence of an intense focalized vocational purpose," but desire is akin to interest and "interests can be explored and inventoried. They can also be at least roughly measured, either directly or indirectly. We usually want to do what we like to do; and we like to do what interests us . . . . This is the first and most obvious reason for attempting to measure a person's vocational interests: to find out whether he will probably like to do the work of the occupation in question.

"A second reason is, to ascertain whether the personal relationships within the occupation will probably prove to be congenial. The man who is interested in the same things that interest his colleagues, who likes what they like and dislikes what they dislike, is apt to feel at home among them.

"In the third place, it is known that there is some relationship—although the connection is far from close—between interests and abilities. More often than not, a person can learn to do best what interests him most, and, conversely, is likely to develop an interest in doing what he finds he can do best.

"A fourth reason for measuring a person's interests is that by so doing his attention is frequently drawn to possible fields of activity which might otherwise be overlooked."

1. *Vocational interest inventories for adults*

In the section on Vocations in the second (1940) *Mental Measurements Yearbook* (1) sixteen interest inventories are listed, with extensive critiques of half of them; in the third (1949) *Yearbook* (2) there are seventeen inventories, six of which had been listed in 1940. A considerable number of these inventories are viewed favorably by the experts, for use with seeing subjects, though occasional adverse criticisms appear. One inventory is severely attacked by all three of its reviewers: it lacks a proper statistical basis; it is too long (requiring 150 minutes to give); it is poorly constructed, naive and amateurish, and should be withdrawn from circulation! Of another inventory the reviewer says: "This is still another vocational interest test which attempts to edge into the field covered by the Kuder Preference Record and Strong's Vocational Interest Blank. Unfortunately, like so many of the other recent tests, its authors have not paid the price in research necessary to obtain unqualified acceptance of their instruments." Discussing still another inventory, the critic lets himself go so vigorously that we feel he must have been very sure of himself to risk a suit for libel! "This is one of those 'quickies' that can be concocted as fast as a stenographer can type. Nothing will injure the field of interest determination so rapidly and completely as the production of armchair inventories of

this kind. Any resemblance between this scale and a scientific instrument is purely coincidental. Saying any more about this scale would constitute a gross waste of space."

Unfortunately for our work, very few of the inventories reviewed favorably for use with the seeing are suitable for the blind. In many of them a long list of occupations is printed, from which the subject is to choose the ones he would prefer, or indicate his likes or dislikes. In Form M of the Strong test (4), for example, which has stood the test of time, and is very widely used throughout the country, less than thirty of the hundred occupations offered for choice in Part I (Occupations) are open to even superior blind people; of the thirty-five subjects listed in Part II (School Subjects), only about one half can be studied in the same way or to the same degree as is possible for pupils with vision, in spite of the clever techniques developed by educators of the blind; in Part III (Amusements) there is certainly no sense in asking a blind person if he likes or dislikes driving an automobile, boxing, tennis, performing sleight-of-hand tricks, collecting postage stamps and various other items; in Part IV (Activities) we find such unsuitable items as repairing a clock, adjusting a carburetor, decorating a room with flowers, drilling soldiers, pursuing bandits in a sheriff's posse, looking at a collection of rare laces; in Part VI (Order of Preference of Activities) a considerable number are outside the life experience of a blind person; in Part VII (Comparison of Interest Between Two Items) you could hardly ask a blind man whether he would prefer to be a street car motorman or a conductor, a policeman or a fireman, a chauffeur or a chef, a head waiter or a lighthouse tender, repair an auto or drive an auto, when all such pairs of occupations are closed to him. In all these parts of the test, so many items would have to be omitted and so few substitutions could be made which are suitable for testing a blind person, that new norms would have to be developed and Strong's elaborate scoring stencils radically changed. Part V (Peculiarities of People) in which the subject is asked to record his likes and dislikes, and Part VIII (Rating of Present Abilities and Characteristics) in which the subject rates himself, consist of items which are as suitable for the blind as for the seeing, but these two parts of the test would be classed as personality measurements rather than vocational interest inventories, even though the characteristics involved are important in one's choice of a vocation. In general, then, one must conclude that one of the most successful interest inventories is unsuitable for use with blind subjects.

A considerable number of the other interest inventories also ask the subject to indicate his attitude toward long lists of occupations, some of the lists being almost identical with Strong's, so these tests are similarly unsuitable for use with the blind. One inventory refers to 378 occupations and is said to be "keyed to hundreds of other occupations in the U.S.E.S. Dictionary of Occupational Titles, Part II". While a selling point for testers of the seeing, this expansion of things the blind *cannot do*, would certainly not serve as a proper interest measurement, and might easily give rise to a grievous loss of security and a marked consciousness of inferiority on the part of the subjects tested. Another inventory lists 360 activities which the subject is to mark with a "D" if he is disinterested, dislikes them or doesn't know about them, an "H" if he would like to make one of them a hobby, or a "V" if he would like to make it his part or full time vocation; but unfortunately about 200 of these activities cannot be engaged in without vision.

One interest inventory, however, the Kuder Preference Record (5), meets our needs very well. It is favorably criticized in the reviews printed in Buros (2), p. 658 ff., and the large amount of research being done with the test (Buros lists sixty-two articles) should ultimately determine its degree of validity for vocational guidance. Low correlations with

achievement and general ability tests are reported, indicating that it is not just another measure of school progress or general intelligence; also the intercorrelations between the nine scales are low, proving that the different scales do not measure the same thing. Its reliability is quite satisfactory, with test-retest coefficients ranging from + .81 to + .98 for the nine scales. The first reviewer writes: "This inventory has been found clinically useful as a vocational counseling aid in secondary schools, colleges and universities, the Army, the Navy, and the Marine Corps, in the Veterans Administration and in industry. It is easy to administer, only slightly monotonous to the individual tested, and convenient to score. Time for administration is usually less than an hour. Hand scoring requires about five minutes. . . . Interpretation of the test is not difficult, and the classification of occupations according to major interests in the manual facilitates this." And when giving the test to blind subjects, Quimby (6), who introduced the test into our field, found all but seventeen of the 504 items suitable for blind subjects, and made appropriate substitutions for these. Hayes (7) improved the technique of giving the test by providing large dot sheets upon which subjects might more readily record their responses without losing their place, published detailed instructions for giving the test to groups of blind subjects, made stencils for scoring the dot sheets, and reported statistical data obtained from trying out the test with the older pupils at Perkins Institution. This year all the pupils in the Upper School at Perkins have been tested and the following table may well serve for the interpretation of results in other schools for the blind. Tables giving the latest *distributions* of scores printed on the same plan as the table on p. 102 of the Hayes article (7) will be sent on request.

Bearing in mind that a 50 percentile score represents average interest among the very large numbers of seeing subjects forming Kuder's basic test population, and that one half of his seeing subjects tested between the 75th and the 25th percentile, we notice that the Perkins boys as a group test very high in their social and persuasive interests, significantly high in musical interest, just above the norms in literary and clerical interests, and a little below the seeing norms in the other four interest areas. The girls as a group have no conspicuously high or low scores, ranging only from 61 for literary interest to 41 for artistic interest. Preliminary reports from agencies using the Hayes dot-sheet method indicate that the Kuder Preference Record is a satisfactory interest inventory for use also with blind adults seeking vocational advice.

TABLE I. Average percentile scores for the Kuder Preference Record, Form BB, obtained at Perkins Institution, by dot-group method, 1947–9

Interest areas	Number of cases	
	76 boys	47 girls
Mechanical	38.49	53.03
Computational	38.02	48.78
Scientific	34.87	54.95
Persuasive	74.15	49.31
Artistic	44.66	41.12
Literary	54.54	61.86
Musical	65.72	52.72
Social	76.12	57.18
Clerical	54.21	45.16

A further advantage of the Kuder project for testing vocational interests is the publication of a shorter form (BI) consisting of 360 items selected from the 504 items making up Form BB and a new form (CH Vocational) in which another interest area is tapped which Kuder calls "Outdoor Interests" and in which he includes a collection of items related to agricultural, naturalistic and outdoor activities. Form CH Vocational consists of 504 items, like Form BB, 60% being identical with items in Form BB chosen from the whole set on the basis of further item analysis. When the shorter test, Form BI, is used with blind subjects, the corrections listed in Hayes (7),

p. 98, should be made before giving the test. No dot sheets and scoring stencils for them have yet been prepared for use with the blind, but the writer is prepared to have them made if there is a sufficient demand.

The new Form CH Vocational contains 345 items taken from Form BB, with 159 new items, the larger proportion of which refer to the new area of "Outdoor Interests", while a few refer to social relations—as, for example: Go to a party where most of the people are strangers, Go to a party where you know most of the people, Go to a party composed equally of strangers and people you know. Choose your own clothes, Get advice on choosing your clothes, Have someone else choose your clothes. Be known as modest, Be known as reliable, Be known as happy-go-lucky. Form CH seems to be a real contribution to tests of *seeing* subjects, but unfortunately a very considerable number of items would be unsuitable for blind subjects. To determine just how much of this test could reasonably be used with the blind, a detailed study has been made, checking (a) each item which refers to an activity impossible for the blind, such as: Cash checks for people in a bank, Be an expert in color photography, Be a cowboy, Make chemical analyses of new commercial products; (b) each item which would be possible only for a blind person of very unusual talent or educational background, such as: Be well known as a literary critic, Give popular lectures in chemistry, Perform laboratory experiments, Be a radio music commentator, Take apart a new mechanical toy to see how it works, Be a physician; and (c) each item which would be possible with the assistance of a seeing companion, such as: Visit an aquarium, a museum of science, a factory in which typewriters are made, a national park famous for its mountain scenery, a former battlefield, Belong to an amateur astronomy club, Compile a dictionary of slang, Make a scrap book of pictures of paintings you like. The items checked were then counted up by the following plan: (1) sets in which all three items would be unsuitable for the blind; (2) sets in which two are impossible and one doubtful (possible only for the unusually talented or with the help of a seeing companion); (3) sets in which two are impossible and one suitable for the blind; (4) sets in which one is impossible and two are doubtful; (5) sets in which three are doubtful. Since the Kuder method depends upon making choices based upon a comparison of interest in three possible items, it would seem that groups 1–4 should be omitted in testing the blind, while group 5 might be used for the benefit of talented blind people, or subjects with a little vision, along with the remaining sets in which only one item had to be checked, especially as we are measuring interest rather than ability. We have also disregarded the difficulty of employment resulting from the fact that the seeing employers may not yet appreciate what capable blind people can do, and propose to give the blind a chance at least to indicate their interest. On the other hand, the retention of too many items impossible for the blind might tend to discourage the subjects tested. It may further be contended that other testers working over the items might allow some, or omit some, on the basis of their judgment of suitability for the blind. With the method of criticism outlined above, we find 306 of the 504 items (70%) available for testing the blind, and after trying them out at Perkins Institution, a report will be made with recommendations as to their use with blind adolescents and adults in agencies, if this seems justified. The regular dot sheets can be used, but new stencil keys for scoring will have to be made.

2. *Vocational and educational interest inventories for pupils in school*

If educational guidance can be based upon interests and aptitudes, and young people directed into the courses which will best prepare them for the vocations they are most likely to follow with success and satisfaction, we should

undoubtedly have many less misfits in the work-a-day world. Many of the inventories listed by Buros are intended for use with high school students as well as with adults, and a few inventories are listed for use with children in the early grades. In the high school inventories we find again a great overloading of items unsuitable for the blind. The Brainard Occupational Preference Inventory, for grades nine and over, is a case in point. This inventory provides for expressions of opinion on 140 work situations and is judged favorably by the experts, one of them writing, "This test excels all others in its possibilities for self analysis and for counselor analysis." But the inventory cannot be used with blind subjects because ninety-four items involve activities impossible without vision, while nineteen others would be possible only for unusually talented or highly educated blind people.

When less emphasis is put upon specific occupations, and interests of a more academic sort are involved, at least two inventories seem suitable for use with blind pupils. Dunlap's Academic Preference Blank for grades 7-9 consists of a list of ninety words which give evidence of the pupils' interest in the ten study areas measured by the Stanford Achievement and the Metropolitan Achievement tests, and the author contends that the scores obtained from this short test—requiring from ten to fifteen minutes—may be used to predict success in the ten subjects involved. The test experts quoted by Buros are skeptical of the predictive value of so short a test, and until further use has been made of it we would not suggest that it be given as a substitute for one of the above standard achievement tests when these can be used. But since the test makes no use of braille it might be very helpful in the grade classification and educational guidance of pupils transferring from a school for the seeing to a school for the blind because of loss of vision through accident or disease in the junior high school years, or even in adult centers testing similar cases. The test can be given to groups of blind subjects quite readily by the use of dot sheets. Seeing subjects are asked to mark one of four letters to indicate their interest in each item—an "L" if they like it, an "I" if they are indifferent or do not care, a "D" if they dislike or do not like it, a "U" for unknown, if they do not know what the word means. In testing a group of blind pupils, the teacher might read an item and have the pupils record their interest by marking with a pencil upon a dot sheet, having rows of four embossed dots, marking the first dot for "like", the second for "indifferent", the third for "dislike", and the fourth for "unknown." The whole test could be given in about an hour and the dot sheets* corrected by the use of stencils made in the same way as those furnished with the test.

Another inventory which seems well adapted for the educational guidance of blind pupils is the Ohio Interest Inventory for the intermediate grades (9). According to the manual which accompanies the test, "The interest inventory was developed as a means of identifying the interests of children of the fourth, fifth and sixth grades. The instrument was based on the ideas and experiences of elementary school children of all levels. The areas of experiences which are considered to be most representative of this age were selected. The final selection consisted of eighteen groups of twenty items each; sports, school, dramatics, leadership, science, English, industrial arts, helping others, health, home activities, movies, solitude, social science, mathematics, music, fine arts, reading and radio." Of the 360 items used, about sixty are unsuitable for children without vision, but these items are largely concentrated in a few areas like science, mathematics, fine arts and industrial arts where blindness is a major handicap and education of blind pupils limited and difficult. As the total score is significant only for a general picture of positive or negative

*Perkins Institution is prepared to furnish at cost the dot sheets needed for testing the blind.

attitude, these unfavorable areas can be omitted and the significant proportions of likes and dislikes within each remaining area used for understanding and guiding the child. The section on the interpretation of scores in the manual shows how this may be done. "Where do the dislikes seem to be concentrated? Do the pupils give more emphasis to some areas than to others? Where do the likes seem to be concentrated? Does any pattern seem to emerge after a closer examination? That is, does the pupil seem to like or dislike those interests which require physical activity, such as games, art work, etc.? If he does, do you, as a teacher, know why? Is the child well? Does he need glasses? Does he lack manual dexterity? Does the child like or dislike the interests that give him an opportunity to be creative, such as writing, playing games, planning parties? If so, do you know why? Does the pupil like or dislike those activities which center around other pupils, such as singing with others, sharing his lunch, helping others with their lessons, and attending school games? If the child dislikes group associations of this kind, what are the reasons? Is he unable to cooperate or has the school program failed to provide opportunity for these group activities? Does the child seem to like or dislike activities which tend to isolate him from other people, such as writing stories, visiting a park alone, or sitting alone in his room? If so, why?" An interpretation of the scores of a fourth grade boy show how the inventory may help to understand an individual child: "Donald has a preponderance of likes and yet has some dislikes, so it can be assumed that he has a wide range of interests, and yet has shown some discrimination. His likes seem to be concentrated on science, helping others, movies, home activities, dramatics, reading and social science. His interests in these areas should be further explored by the teacher. He has many dislikes in sports and his likes seem to center around the spectator angle rather than active participation. He has quite a high count of dislikes in mathematics and music which may imply some difficulties in these areas and a possible need for motivation. His number of likes under solitude is unusually high. Thirteen out of twenty items indicate that he spends a good deal of time alone. This may indicate a problem in adjustment which the teacher should study. The fact that he dislikes nine items under leadership may indicate that he has a tendency to be shy and retiring."

Special attention should be given to children showing a large number of dislikes. To quote the manual further: "If a pupil has a preponderance of dislikes, it is frequently an indication of maladjustment and the teacher will want to make inquiries concerning possible causes. Is the child in good health? Is he accepted by his schoolmates? Is his home life happy? Does he have difficulty in handling his body? This may account for his dislike of games and handicraft. Is the child limited in intellectual capacity? If the child is limited in the number of his likes, it may mean that he has not had an opportunity to examine the resources which are available to him. An exploration of these possible causes for many dislikes may reveal the real difficulty. Sometimes a child seems to limit his interest to one or a few areas. The teacher in this case will need to broaden the horizon of the child and to direct him to other interests".

A study of the scores of one or more grades of children may offer challenges to the curriculum, according to the manual. "Do a large number of pupils express interest in an area which is not being emphasized in the school at present? This may mean that modification of instructional materials and methods is desirable. If the equipment is lacking, some provision should be made for securing it. Sometimes individual pupils or a group may reveal deficiencies in instruction, such as reading, mathematics, or English. This again has curricular implications."

The Ohio Interest Inventory can be easily adapted for use with blind pupils. Seeing pupils are given a four page leaflet listing the 360 activities, in groups of five items in each area, with each of the eighteen areas appearing four times during the test. The pupil is asked to write an "L" for "you like or think you would like" or a "D" for "you dislike or think you would dislike" for items in the following verbal pattern: "*To hear* sports broadcasts", "*To go* swimming," "*To sing* in a chorus," etc. With a class of blind children, we would suggest giving the test orally, the teacher reading each activity, and asking the pupil to indicate his interests on a dot sheet, marking the first dot of each pair with a pencil for his likes, and the second dot for his dislikes. The dot sheets could then be scored by writing I at the four places where interests in sports are recorded, II where school interests are recorded, etc., and then counting the likes and dislikes. For the study of individuals having a high total score of likes or dislikes, or marked preponderance of likes or dislikes in certain areas, the interest choices could be easily transferred to the regular printed sheet for a study of the details. We would suggest the omission of the sections dealing with fine arts, science and mathematics, since they include so many items impossible to blind pupils that a feeling of discouragement might well develop. The sections on industrial arts may be given if the blind children in the school being tested are encouraged to undertake more than half the activities listed, or if there are a good many children in the grade with useful vision. When the first questions about *movies* are given, the teacher should say that these items apply to *sound* movies, except in the case of item 90 which specifically mentions "silent movies." The form of the questions, ("To *see* homemade movies"), need not be changed, as blind children generally prefer to use the same language forms as their seeing companions. When the class comes to the first section on reading, the teacher should say that these questions refer to any kind of reading—print, braille or Talking Book reading.

Summary

This is the first of a series of articles upon mental tests suitable for use with the blind. Interest inventories have considerable value for the educational and vocational guidance of the seeing and a considerable number are listed with favorable comment in the *Mental Measurements Yearbooks* published by Buros. But when the items are studied from the point of view of the blind many of the most popular and scientific tests have to be rejected. One inventory, the Kuder Preference Record, can be recommended, and has already proved its worth in trial with blind adolescents and adults. The Dunlap Academic Preference Blank, may be favorably recommended for the educational guidance of junior high school pupils, and the Ohio Interest Inventory for intermediate grades gives promise of valuable assistance in the elementary school. All of these tests may be given orally, without the use of braille, by having the subjects record their responses on dot sheets, which Perkins Institution is prepared to furnish on order.

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THE TREATMENT OF THE PARTIALLY BLIND

LESLIE H. SALOV

THERE ARE MANY PEOPLE who cannot be truly classified as blind but who do not have sufficient eyesight to do their everyday work. These people are classified as the partially blind. Their vision may range from 20/1,000 to 20/40 (corrected with regular eyeglasses.)

The treatment of the partially blind had its beginnings in Germany by Dr. Kircher, well-known ophthalmologist, in 1646. In 1667 Escinardi designed telescopic spectacles for near use. Similar experimental devices were made use of during the 18th century by Zahn, Hertel, Meyen and Stack. In the 19th century Chevallier designed binocular telescopic spectacles and further advances were made by Peytel, Schonstedet, Delcartes and Mauthner. In the last few decades remarkable strides have followed the improvements suggested by von Rohr, Scott, Müller, Lauber and Henker.

What Cases Constitute Subnormal Vision Problems

Subnormal vision is indicated when the patient's visual efficiency with ordinary lenses is insufficient for his needs. Impairment of efficiency may result because visual acuity is slight or the field of vision is contracted. The cases of different types that constitute this group range from seven to ninety-three years of age. To better appreciate the variations among these cases, those who have already been helped should be considered. Their difficulties of vision have been present for from six months to forty years. Some of these people were born handicapped by subnormal vision, others developed it in childhood, in middle life, or in old age. A number of diseases and anomalies were responsible for the condition. The cases included involvements caused by keratoconus, corneal scars, keratitis, irregular corneal astigmatism, all types of cataracts, retinal lesions, glaucoma, retinitis pigmentosa, central chorio-retinitis, detachment of the retina, primary and secondary optic nerve atrophy and posterior uveitis.

In addition to such pathological conditions, various physical anomalies also produced subnormal vision. These included coloboma of the iris, of the lens, and of the choroid. Also congenital cataracts and dislocation of the lens were responsible for causing great reduction of vision.

The patients suffering from subnormal

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vision come from all walks of life, have had different types of childhood training and educational background, and so have different attitudes as to what constitutes an improvement in their visual efficiency. The child who has been trained in the school for the blind in the reading of braille requires a different type of acuity for his future needs than the person well advanced in years, who shows a moderate degree of senility and is primarily interested in seeing well enough to write a letter or sign a check.

What Optical Devices Are Used for The Correction of Subnormal Vision?

The optical devices used for the correction of subnormal vision are the contact lens, the definite types of single and multiple pinhole spectacles, different types of telescopic spectacles for distant and near vision, microscopic spectacles of definite magnification, and mirror spectacles.

Each of these various devices is aimed at correcting a specific optical abnormality of the eye—thus the contact lens may be used in any condition where the corneal surface has become irregular.

Pinhole spectacles are used in cases of media involvements, either corneal, lens, or vitreous. There are at present telescopic spectacles of 1.7x and 2.2x magnification, and a cylinder telescope. These different telescopic spectacles are used particularly in cases of retinal involvements. They may sometimes be used in cases of media involvements and in those cases where there is both a media and retinal involvement.

Microscopic lenses are used exclusively for reading because they have such a short working distance. They can be designed for any required magnification. Their use is indicated in cases of extremely slight central acuity such as results from a primary optic nerve atrophy.

Psychological Characteristics of the Visually Handicapped

Up to this time we have considered the difficulties of the patient with subnormal vision and his problems in optics. There is no doubt but that special problems of optical design are presented. Not for a single moment, however, should it be overlooked that superimposed upon these optical problems are psychological factors.

This situation must be appreciated even before one undertakes to examine such a patient, otherwise errors in prognosis will frequently be made. The patients themselves are not likely to offer any statements indicating to what extent their subnormal vision has changed their personalities, emotions, desires, social attitudes, and will to live.

To aid in understanding these psychological factors, a number of observations are presented. In the first instance, there is a definite relationship between the duration of the subnormal vision and the extent of the improvement desired. An individual who has had normal vision up to a few months before appearing for examination cannot conceive of being satisfied with an improvement in acuity of say from 20/200 to 20/80, in fact persons who have had poor vision for only a short period are far more interested in having their visual acuity improved than they are in having the disease causing the subnormal vision cured.

One of the reasons that so little success was attained in many previous attempts to fit telescopic spectacles was that they were only tried with patients who had but recently lost their vision. Such a patient will, all during the examination, explain that while he may be able to read the letters, he does not see them clearly or accurately but is really "guessing" or "calling them back from his memory." He will further contend that there is a constant blur in front of him and that he would

never be satisfied with seeing things that way and that he could almost see as well without any glasses. It is for such cues as these that the doctor should be on guard. If they are properly understood, they should lead to the feeling not that the patient is unwilling to cooperate but rather that the patient cannot be expected to cooperate unless the doctor can offer definite new hope. There are some people who although they suffered a loss of vision one, two, and probably five years ago, will talk about their condition as though it had happened only the day before. Such individuals, psychologically, have the same attitude towards the improvement that has taken place as those who have lost their vision only recently.

In contrast to those patients whose present condition has existed for only a short period, there are those who have had subnormal vision for five, ten or twenty years. These patients have become more or less resigned to the idea that they will never see better. (We want to emphasize very strongly, however, that any person who has ever had good vision never really resigns himself to the thought that he will not see better.)

The cases in which poor vision has existed for a long time may be divided into two groups. In one group are those who have become hopelessly dependent upon others for most or all of their visual needs. They will not go about alone; will give up all reading—even large street signs. They will never attend the moving pictures or theater. They will not make any social visits. The result of such an attitude and of normal functioning of the eyes is that they actually lose whatever visual memory pictures existed at the time poor vision developed. Such individuals, consciously realizing what they are doing, learn to take advantage of their affliction in dealing with the other members of the family. This often results in an antagonism between the different members of the family in relation to this problem of improving the patient's vision. When such a patient and his family arrive at the doctor's office for examination, the patient will make every effort to underestimate the improvement, just as the other members of the family will overestimate it. The doctor must not let the lack of enthusiasm of the patient nor the overconfidence of the family interfere with the proper prognosis.

For example, the case of Mr. A. H., sixty years of age, who was brought for examination by his two daughters. The improvement in vision was quite satisfactory both for distance and for reading with the telescopic device. His daughters were both delighted and wanted everything done to enable their father to read so that he could utilize his spare time. Obviously this was a situation where the problem of entertaining the father was constantly shouldered by both daughters, who were married and had responsibilities and their own families to look after. They were anxious that their father should have something to do, to relieve them from talking to him and sitting home constantly to entertain him. However, in spite of the fact that his improved vision permitted him to read print equivalent to newspaper print, the patient still maintained at the end of the second examination that he would never be able to see well enough to read. The daughters immediately accused him of not even trying. By telling him that no effort would be made to have him read, but that all efforts would be devoted to enable him to see a motion picture, he consented to return for further training. About three weeks after the adaptation period had elapsed, the patient suggested that he would like to try to read again. This case illustrates how important it is for the doctor to adopt the attitude that the patient is governed in his reactions by conditions which have nothing to do with the optical problem of vision.

The second group, those who have had subnormal vision for a long time, are char-

acterized by their ever-existing hopefulness that their condition can be helped. In these cases, the patient becomes very enthused with the results no matter how small they may be and during the examination period he will impress both the doctor and his own family with how well he sees. These cases usually are older people who are not so much concerned with what they can do with their improved vision as they are with the idea that the improvement itself is possible. For example, the case of Mrs. G., sixty-five years of age. She had very restricted fields of vision. Her condition had existed for about thirty years. Telescopic spectacles improved her distance vision and her reading vision to permit her to see ordinary print. In spite of the improvement in her vision, the patient could not go about outdoors alone because of the field involvement and the result was not as good as the patient expected.

A second psychological factor that must be considered before, during, and after the examination, is the relation between the age of the patient and the extent of improvement desired. We may divide patients into three groups—young, middle-aged and old. The young patients are usually children who have had subnormal vision from birth or acquired it shortly thereafter. Many of these are children who have been trained in the schools for the blind and so have had no visual training. Others have had too little vision to attend the regular schools, but have not attended the schools for the blind and so their education was limited to what they could pick up through their other senses. To undertake an examination of a young person who has never learned visual letters or numbers is a very difficult task. R., for example, aged fifteen, had attended the school for the blind since he was eight. His sum total of visual knowledge consisted in his being able to scrawl what was supposed to be his name. The prognosis which was finally made at the end of six examinations was that his vision could be improved sufficiently for him to carry on work in regular high school. Only six months of daily training with telescopic spectacles permitted this result to be accomplished.

Middle-aged people usually desire an improvement in vision that will permit them to engage in gainful occupations. These patients frequently claim that they are interested in such things as reading or writing or seeing better in the moving picture show or theater. They want better vision for the particular jobs that they have in mind. If it happens that the patient's requirements cannot be satisfied because his field of vision is limited or the telescopes do not give him sufficient vision, then the doctor must decide whether he will eventually derive sufficient benefit from the optical device. For example, Mr. S., forty years of age, a retail stationer with a partial optic nerve atrophy, was concerned only with being able to quickly observe such things as the writing on labels, reading and entering orders, making proper change, reading the marks on a scale, and such things. He had to do these things while actively moving about. Frequently the patient cannot be provided with the degree of vision he seeks but can obtain an improvement sufficient for other purposes. When such a satisfaction arises, the doctor must weigh the possibility of arousing within the patient a desire to find new uses in the direction of his improved vision.

The patients who are well advanced in years and who constitute the old-age group are usually satisfied with almost any type of visual improvement. Their actual desires may appear peculiar but when analyzed represent a very normal aspect of old age. Many of these patients feel quite happy that they can be made to see well enough to sign their names, write an occasional letter, or read for even ten to fifteen minutes during the day. They also feel that if they can be enabled to recognize a person across the room they have gained a great deal. Actually these seemingly

small improvements of vision represent to them the fact that they are still part of the everyday world. As long as they can use their own sense modalities, they are still concerned about improvements.

Often the doctor does not appreciate that these small things mean a great deal to such people and he should set himself up as the judge in such cases as to whether the patient will get sufficient use from these special optical devices or not. Take the case of Mrs. K., eighty-seven years of age, who was fitted with telescopic lenses. Even though her secretary read to her at all times, she was very anxious to be able to read large print in the papers herself, to sign her name to letters she dictated, and to play solitaire. A letter from her daughter following the death of this patient about six months ago told us how happy the patient had felt knowing that she had retained her vision to the end.

The doctor ought always to keep in mind that patients with subnormal vision, just like people with any other type of major affliction, are subject to changes in attitude toward themselves and the rest of society. The extent of these changes, in so far as the visually handicapped are concerned, depend for the most part on the nature of the affliction, the recency of onset, and the age of the patient.

The Training Periods Necessary for Subnormal Vision Patients

Every patient, in order to get the greatest use and most improvement out of his specially designed optical device (telescopic lenses, microscopic lenses, multiple pinhole discs, or mirror glasses) must go through a training period in order to adapt himself to the new device. This training period concerns itself with certain problems in learning. These learning problems include those on a motor level and an association level as well.

Where the optical device is to be used for reading, a new type of motor coordination is necessary in order that the patient may learn to properly harmonize head, eye and arm movements. The lack of such coordination will result in the frequent loss of the field of vision and the inability to maintain a clear focus. It is not generally recognized that even in normal reading a certain type of coordination between these bodily parts exists. It is this coordination that must be changed when telescopic lenses are used. Since such a learning problem exists, the general method of conducting this learning should be the same as is applied to all such problems. That is to say, one should proceed from the simple to the complex. Therefore, in teaching a patient how to use telescopic spectacles for reading, the doctor should arrange matters so that reading can be carried on as simply as possible. The essential element in learning this new coordination is practice. It is imperative that the practice be under the doctor's immediate supervision and not be left to any technician or to the patient himself. As in all problems involving coordination, the younger the patient, the quicker will such learning occur. Where the patient is well advanced in years, he may not be capable of such coordination. At all times the illumination should be properly regulated and the patient informed at each visit of the type of illumination that he requires.

The length of each of these training periods is determined by the amount of work that is required and the patient's physical condition. They may extend from one to three hours at a time with sufficient rest intervals. Where it is necessary to practice writing, in order to develop proper coordination, the patient should be provided with the proper materials. The paper should be properly ruled and the patient instructed to write large enough so that he can see the letters that he is writing. Then as the patient progresses, he is permitted to write the letters smaller and smaller until they are of normal size.

There are many patients who have had subnormal vision for a long time or even since

birth and have never learned to read or write. It is not generally recognized that patients who have not actually done any reading for periods of from five to ten years forget how to read.

Reading ability in normal eyes is a learned process and depends essentially upon the recognition of cues. When the normal eye reads a line of print, it performs saccadic movements and pauses. During these pauses, certain cues are recognized which help the patient to see words and phrases. For example, the eye will recognize the length of a word, the presence of upper and lower case letters, the presence of familiar prefixes and suffixes. This recognition of cues leads to the recalling of the entire word. The normal eye, in reading, never consciously sees each of the letters in every word.

As the child with normal eyes learns to read better, he increases his reading span in proportion to his eye-voice span. The reading span refers to the number of letters or words that can be recognized in a given time. The eye-voice span refers to the time interval between visual recognition of a word and its vocalization.

In cases where a subnormal vision device is used, the size of the field of the device and certain peculiar eye movements prevent the development of normal reading and eye-voice spans. This is one of the reasons why the patient should be instructed to keep the head and eyes fixed and to move the paper or the article that he is reading from right to left at a smooth, even rate. Those patients who did learn to read in early life but have not read for five, ten or twenty years, present problems of relearning. Relearning is a quicker and easier process than learning for the first time. Therefore, all that these patients require is a sufficient amount of practice to recall memory pictures of words and phrases.

The other group, those who have never learned to read or write, are usually children or adults who have been trained in the school for the blind. These patients, for the most part, finger the braille but cannot differentiate visually the different letters or movements. Such cases must actually be taught how to recognize numbers, letters and words. The doctor who undertakes to provide subnormal vision devices for these cases must also undertake to teach the patient to visually perform the fundamentals of reading and writing.

Conclusion

The field of subnormal vision is not only an extremely important one with reference to helping the visually handicapped to see better, but also involves and is closely associated with the field of rehabilitation. It certainly is evident that many individuals who have extremely poor vision become dependent upon other people—the family, the state, and eventually the country. These people who can be helped by the designing of some special optical device and the training that is necessary to get the greatest benefit out of this device, can become less dependent on other people for their essential needs and visual tasks.

There is a need for more work of this kind to be done throughout the country, both by ophthalmologists and optometrists. Not every eye practitioner can devote the time and interest necessary for doing this special work, but there is a definite need for more professional people to acquaint themselves with these particular problems of the partially blind. Many people who at present are classified as blind might be helped to see better by a special investigation of their eyes and the designing of some optical device which improves their sight enough so that they can again take their places in the seeing world.

The purpose of this article is to give some hope to those people who do not know about this specialized type of work and who might benefit by an investigation into the possibilities of improving their vision.

THE MEDICAL ASPECTS OF BLINDNESS IN CHILDREN

C. W. RUTHERFORD, M.D.

Physical Explanation of Blindness

Blindness exists where there is inability to exercise any of the visual functions. An individual is blind if he cannot see under circumstances that do not prevent others from seeing. In total darkness all mankind are blind, for an object to be seen must be illuminated. Rays of light reflected from an object meet the eye that is directed toward it; they enter the eye if the cornea is transparent; they pass through the pupil if it is clear of obstruction; they are focussed by the lens if it is transparent; they pass through the vitreous if it is transparent; and finally they converge to a point (focus) on the retina and stimulate its cells to form an image of the object if the retina is healthy. Nerve impulses are carried by the fibers of the optic nerve from the retina to the visual centers of the brain, where the image is interpreted and then projected out into space to coincide with the position of the object.

Any opacity in the eye that prevents light rays from reaching the retina will conceal an object as effectively as though an opaque screen had been placed between the eye and the object, or as though the eyelids were tightly closed.

The cornea may become opaque from inflammation (keratitis) or by a white scar that forms in the healing of an ulcer of the cornea (leucoma).

The pupil may become occluded or light obstructed by an organized exudate or false membrane that is formed in consequence of an inflammation of the iris (iritis), or of the ciliary body (cyclitis), or of both (iridocyclitis).

The lens is opaque when a cataract is present.

The vitreous may become opaque to light rays from a variety of causes (see *Maternal Influences*).

No image can be formed on a retina whose cells have undergone degeneration (retinitis) by disease of the eye or by general disease such as diabetes or nephritis.

The choroid is a vascular bed that supplies blood to the deep layers of the retina and therefore is essential to vision. Where the entire choroid has suffered degeneration (choroiditis) the retina cannot function. But choroiditis usually occurs in patches only. The retina and choroid are often damaged together (retinochoroiditis or chorioretinitis).

The optic nerve structure may become degenerated (optic atrophy) and visual impulses cannot be transmitted from the retina to the brain.

Glaucoma causes blindness by increased intraocular pressure on the retina and the vessels that supply it with blood, and by pressure on the optic nerve at the point where it leaves the eye. The pressure builds up when aqueous humor is formed more rapidly than it can be drained from the eye, or when

The above article is reprinted from *Public Welfare in Indiana*, July 1948.

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drainage is obstructed so that the aqueous cannot leave the eye as rapidly as it is formed in normal amounts.

Finally, the brain cells may be damaged to such an extent that visual interpretation is impossible.

Etiological Classification

Eye conditions that account for impaired vision ranging to total blindness may be divided into categories such as: 1. Congenital anomalies; 2. Maternal influences; 3. Heredity; 4. Acquired diseases, and 5. Traumatic injuries.

Congenital Anomalies

Anophthalmos means the absence or practical absence of eyeballs at birth; it is due to an arrest in the developmental process of forming a globe.

Microphthalmos means that the globe is small, and that all its parts, especially the cornea, are noticeably smaller than in the normal eye. This is due to an arrest of growth rather than of development.

Megalophthalmus means that the globe is overgrown in size. The cornea is very large. Growth was not stabilized at the proper time or stage of development.

Buphthalmos is also characterized by an enlarged globe, but that is due to increased pressure within the eyeball and therefore is a congenital glaucoma. The cornea is very large and the anterior chamber is very deep. The color is decidedly bluish.

Amblyopia ex anopsia denotes an eye that becomes essentially blind through lack of use. The child often has a considerable error of refraction, more marked in one eye than in the other. Obviously the eye with easier vision is chosen for habitual use. The image formed by the eye with the higher refractive error is not as clear as the image formed by the eye that sees better; the less clear image tends to blur the better one. The child, automatically it seems, directs the offending eye nasally or temporally (strabismus or squint) to avoid the blur, and thus learns to ignore what may be seen with that eye; this is called visual suppression. By non-use the vision in the idle eye deteriorates. Where the case is taken in hand early and visual training practiced consistently and persistently, and correcting glasses are worn constantly, the child has a chance to regain some of the lost vision in the affected eye.

Maternal Influences

The large chamber of the eyeball behind the lens is called the vitreous chamber because it contains the vitreous. From an early stage in the development of the embryo this chamber is occupied by blood vessels. During the third month of intrauterine life these vessels begin to disappear, and the atrophic process is completed by the time of birth or soon thereafter in eyeballs that have developed in a normal manner.

It is during the early months, the second through the third of foetal life, that the eye is most liable to be permanently damaged through the influence of coincident infections in the mother. Some diseases, especially German measles and possibly some other virus infections, may be so mild that the mother suffers little or no inconvenience and consequently attaches no importance to their presence. Other and more serious maladies may be present, such as ulcerative colitis and brucellosis.

In the last ten years there has been studied, named and described a condition responsible for some of the blindness in infants, especially prematurely born infants; although the condition has been in existence for a very long time, it has been misinterpreted. The name is retrolental fibroplasia; that is, it consists of an organized development of fibrous tissue immediately behind the lens. The tissue growth is opaque and no light rays can pass through it to the retina.

Comparatively few cases have been recorded

outside of large clinics. Evidently many cases have been overlooked or unrecognized. It has been estimated that one-third of the cases of preschool blindness are due to this condition of retrolental fibroplasia.

The incidence of numbers affected seems to be increasing. A large percentage of these children have been found in the group of prematurely born infants. The mortality rate in this group has been very high in the past, but with greater efficiency in pediatric management more of these infants survive and become available for study and statistical tabulation.

The etiology is believed to be an infection; in eyes that have come under microscopic study iridocyclitis and choroiditis have been identified. Measles and other virus diseases have been found to have been present in the mothers in the early months of pregnancy. About half the mothers give a history of having had vaginal bleeding during their term. This observation is in harmony with the observation that many infant victims of retrolental fibroplasia had been prematurely born. Also, vaginal bleeding while pregnant makes one think of brucellosis, a disease of cattle that brings on abortion. There is a form that affects humans; it is often difficult to diagnose and many times eludes recognition. Through the activities of the State Board of Health the medical profession is becoming increasingly alert to the previously unsuspected prevalence of this disease; consequently more and more cases are being detected.

Retrolental fibroplasia is frequently associated with subnormal mentality and physical abnormalities.

Cataract may exist at the time of birth or become manifest at any time up to the age of twenty-five years (cataracts that develop later in life are not under consideration here). Since the cataract that is present at birth is the only one that can be strictly designated as congenital, all that appear after birth are more properly called developmental; that is, the true origin may exist before birth but development is delayed.

The physical state of the mother may be important; in her there may have been, while pregnant, a faulty utilization of calcium, interference with the secretions of the parathyroid glands, avitaminosis, especially lack of vitamin D, and possibly other factors such as the ingestion of chemical substances. This last has been observed experimentally in animals. In many cases where cataract was noted at the time of birth the histories showed that the mothers had had German measles or some other virus infection in the first two or three months of pregnancy.

Although a congenital cataract may be successfully removed, other coexisting congenitally blinding conditions, previously hidden by the cataract, may be discovered and these can defeat the effects sought by surgery. In such cases the surgical technique could have been faultless but the child is no better off than before.

Infections present in the expectant mother may be responsible for choroiditis, iritis, iridocyclitis, keratitis and other eye diseases in the foetus. In general, these infections leave permanent damage to the structures involved, with resulting visual impairment up to total blindness.

Maternal influences have a definite role in the causation of blindness in children. Prospective mothers generally are unaware of the consequences of some of the illnesses that they think of as being trivial; they need education. Prenatal clinics cannot be operated without funds, but it costs more to take care of an indigent blind person than it would to prevent him from becoming blind.

Heredity

Retinitis pigmentosa is a pigmentary degeneration of the retina. The field of vision is progressively contracted until only tubular vision is left, and finally that is squeezed out.

Generally it begins before the age of ten years and is as yet regarded as incurable. Females seldom have the symptoms.

Genetically considered, the cases may be divided into three types: 1. The dominant, in which either parent may transmit the disease to both sons and daughters; 2. The recessive sex-linked, in which unaffected mothers, daughters of affected ancestry, transmit to sons only; and 3. The simple recessive, which is associated with nerve deafness and destructive lesions of the central nervous system. Consanguineous marriages have been noted in the histories of from twenty-five per cent to forty-eight per cent of the cases of this type that have been studied.

Obviously, members of affected families should not have children, and should be made to understand the purport of the responsibility they assume when they elect to have a family.

Acquired Diseases

Syphilis has for centuries been recognized as a cause of blindness. The disease oftentimes is transmitted to the infant before birth and is manifested in a number of ways. In interstitial keratitis the corneas are invaded by blood vessels, generally at about the age of four to six years; that is, the onset of symptoms is delayed. It is very resistant to treatment but has a tendency to "run its course" in a few years; by that time the corneas have suffered much damage because the walls of the blood vessels invading the corneal structure have become stiffened by opaque connective or fibrous tissue. Even when there is no blood in them the vessels remain open. Any subsequent injury to the cornea such as a contusion or bruise, is liable to excite the keratitic process and then the disease recurs, but only in the injured eye.

Other inflammations of the eye that result from syphilis, acquired before birth or contracted later, are iritis, iridocyclitis, choroiditis and chorioretinitis. Where syphilis attacks the central nervous system, usually long after the period of childhood is passed, the optic nerves undergo atrophy and the eyes become blind.

Parenthetically it should be understood that even repeated negative blood tests do not rule out syphilis of the central nervous system; in suspected cases the cerebrospinal fluid must be submitted for tests. Where blood or cerebrospinal fluid give a negative reading, tests should be repeated several times by different methods, even by different laboratories, before full assurance can be had that syphilis is not present.

Predisposition to tuberculous infection can be inherited, and be the cause of blindness. Fortunately, modern methods of detection and treatment have, in the last half century, greatly reduced eyeball and visual damage incident to syphilis and tuberculosis. Further progress is possible by increased activity for the prevention and early control of cases. A perennial problem is how to persuade patients to continue treatment after they are free of symptoms.

Ophthalmia neonatorum, an infection of the eyes nearly always due to the gonococcus, is acquired in passage through the birth canal. Formerly far more than half the cases of blindness in children were due to this disease. Credé, an obstetrician and oculist, in 1884 published his method of prevention. This consisted of instilling a single drop of freshly prepared one per cent or two per cent solution of silver nitrate between the eyelids of each eye at birth. In countries where this prophylactic treatment was adopted the number of new cases of blindness from this disease speedily dropped. Some countries closed their asylums for blind children.

New cases nowadays are rare, and of these many are suspected to be due to infection introduced into the eyes after birth by careless or ignorant infected persons who attend the infant. This suspicion is well-founded if no evidence of inflammation is noted until

the child is about a week old. The name of these late cases is gonorrheal conjunctivitis.

A few months ago one of the national lay journals published a sensational article which emphatically condemned the Credé treatment and exhorted state legislatures to prohibit its use and require penicillin instead. No credit was mentioned for the good effects accomplished by the Credé method in a half century of experience; neither was there any warning that penicillin is a new drug which has not been completely studied and which may in time be found to possess undesirable effects. It is already known that this drug must be kept under refrigeration and that some patients are sensitized by use of it and thereafter are subject to ill effects should it ever be used again.

Trachoma was a serious cause of blindness until the introduction of sulfonamide therapy. The damage was inflicted on the cornea, which became so opaque that light rays could not pass through it. Indiana had no organized plan for treating trachoma in children until 1947 when the General Assembly authorized the Department of Public Welfare to grant such treatment to those who are otherwise eligible for public assistance. The objectives are to control the disease early in young persons before material damage has been done and to prevent infection of unaffected members of the patient's family and associates. Strict attention to the objectives will eradicate the disease from Indiana in due time.

Intraocular tumors in children are nearly always found to be glioma of the retina (retinoblastoma). Both eyes are affected, but rarely at the same time. Because it is yellow the pupil is called "cat's eye." The tumors in the two eyes are formed independently of each other; neither transmits to the other. From either eye the tumor grows until it ruptures the eyeball or extends backward to the brain and causes death. In recent times radium and deep X-ray therapy have been used to destroy the tumor in the hope of saving the eyeball, but sight is usually badly impaired or lost. Nearly all cases occur in young children, mostly by the age of seven years.

Traumatic Injuries

Injuries to the eyeball sometimes cause blindness. Only the injured eye is blind, but where sympathetic ophthalmitis follows the injury both eyes become blind and even both eyeballs may have to be removed surgically. And most accidents are preventable!

Mañana

Comparing the blindness situation of a half century ago with that of today, one must be hopefully impressed by the prospects to be anticipated in another fifty years. Extensive projects for preventing blindness are under way. Many blinding tendencies can be corrected during the period of childhood, and the place to start is the prenatal clinic.

SHORT STORY CONTEST

To encourage the art of short story writing among blind school-age children, The Lighthouse, through its braille magazine, *The Searchlight,* has sponsored for the past twenty-five years a short story contest open to its readers. This year, the first prize, a United States Savings Bond, donated by Carl Van Doren, was won by Gene Loll, age 16, of the Iowa School for the Blind, Vinton, Iowa, for his story, "Routine Flight."

Honorable mention goes to Joyce Ann Campbell, age 15, of the Minnesota Braille and Sight Saving School, Faribault, Minnesota and to J. W. McCracken, age 14, of the School for the Deaf and Blind, Colorado Springs, Colorado. The Colorado School has carried off the first prize three times in recent years.

The prize-winning story will appear in the fall issue of *The Searchlight.*

ORIENTATION TO BLINDNESS

C. STANLEY POTTER

ORIENTATION IS BASIC to adjustment. As used in work for the blind it means that mastery of mobility which is the first great step in freeing the blind person from a state of utter dependency. But orientation also means learning to eat so that the sighted do not rebel at having to watch you; learning to keep clothes and other personal property in order and where they can be found; learning to comb hair and shave without a mirror; learning to know what clothes you are putting on, whether they are clean, whether both socks are of the same color, whether colors harmonize or clash. And even more, orientation means learning to identify the objects around you with a minimum of investigation, remembering how you got where you are and what direction you are facing, keeping aware of the positions of the people to whom you are talking so you turn to them naturally rather than away from them when you speak, knowing when to shake hands with people and to offer yours first so you won't miss someone else's outstretched hand.

Sighted persons behave very similarly to one another because acquiring observed behavior is so easy, but if you have never seen how another looks when he stands, walks or sits, you are likely to do these things enough differently to appear awkward to the sighted. Blind persons who stand so erectly that they seem to be looking over the heads of others, or at the ceiling when they walk, or who sit so rigidly that they look uncomfortable, need orientation training.

The purpose of orientation training is very frequently misunderstood by blind children, their parents and some teachers. Training may even result in very unfortunate behavior and attitudes unless its real purpose and concept are thoroughly understood. Orientation skills must be learned to provide the blind person with personal freedom and social acceptance. Their purpose is not to convince the sighted that he isn't blind, nor are they to make people think that he's a magician. The less wonder a blind person arouses by his skill, the more his personality will be noticed rather than his blindness, and the better he will be oriented.

In present-day schools for the blind, where formal orientation training is given at all, it is generally a part of the secondary school curriculum. In other schools and classes blind children are still led around. And others encourage children to go alone from place to place within the building, but not in the streets. In fact, the problem of orientation is commonly thought of as "foot travel". For example, use of the white cane—important to safety and skill in independent outdoor travel—has been talked of so much that many workers and teachers continually refer to the need for learning to use this instrument, failing to see that it is but a tool and that orientation requires broad physical and psychological adjustment. Persons who do not think of orientation as such can do little to foster it in a blind person. Parents should be given pro-

Reprinted from the July issue of *Minnesota Welfare*, a publication of the Minnesota State Division of Social Welfare.

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fessional help with orientation so that they can work with a child during the time when it is natural for him to learn his first physical movements and to develop his early perceptions of things about him.

Learning orientation rests largely with the individual and ordinarily takes place over a long time and in an informal way. Although in older students the will to learn may be spurred by long-term, consistent aspirations, the desire is usually highly sporadic, depending upon the needs and wants of the moment. Failure to encourage skill early is a mistake; later attempts are always comparatively ineffectual. Skills need, at least partially, to be learned before one discovers that because he is different the generosity of others will make it possible for him to avoid the learning effort when he so chooses. The problem is comparable to the difficulty one might experience in teaching a child of school-age to walk or talk, if he had never learned how before and if someone else were making these skills unnecessary. But regardless of the age at which the learning takes place, it is critical and difficult and the difficulty is exceeded only by the importance of accomplishment.

Because the same principles underlie orientation that underlie the learning of other manual and thinking skills, parents and teachers who understand the laws of learning can make a great contribution in this area. On the other hand, the all-too-typical display of exaggerated sympathy, fears about physical safety, and using unnecessary personal services, constitute a bigger obstacle to orientation than many children can overcome.

We can only speculate as to what levels of performance large numbers of blind persons could reach with truly thorough instruction beginning in preschool life, where it is most needed and yet in practice most lacking. We do know that certain blind persons reach high levels of performance, largely gained by their own ingenuity along with conducive environments in which they happened to find themselves. Striking results have also been recorded by professional workers with individual adolescents and adults. But in the long run, more early instruction still stands as the urgent need in obtaining top-level achievement of orientation skills.

Some current ideas about orientation verge upon the mystical. The term "sixth sense" and "facial vision" have been employed, but they simply describe accommodations in which unusual acuteness is developed to sound and touch. The skill of blind persons here is also frequently exaggerated. Although obstacle sense does play a very important part in orientation, it is true only with large objects.

Persons who, in spite of proper assistance do not become independent in moving around, usually lack enough motivation or have the wrong attitudes or other learning problems. They may have problems of coordination or equilibrium, or suffer hearing defects. The absence of normal tactual acuity is also a severe barrier.

Training in the use of white canes and guide dogs is frequently confused with the much more all-inclusive process of full orientation. Canes and guide dogs are but aids to getting around and should be clearly discerned as such. The problem of adequate orientation would be easily disposed of if independence lay in a bamboo cane.

Directing attention to and explaining sound which might have meaning is helpful in orienting a blind child. Pointing attention to pitch, volume, reflection, variation and distance, along with the reason for the sound's origin, description of the creature, object, or process from which it comes and other such information is meaningful. Feeling objects to relate them to sound is helpful. Giving attention to texture, size, temperature,

use and so forth, along with good verbal description is the way in which an idea of the world must be obtained. Descriptions of people, places, impressions, reactions noticed in others, all inform and stimulate.

These attempts must all be made with judgment and understanding, and must be in line with the interest and receptiveness of the blind person, whether child or adult. Blind persons with help of this kind develop substitute mechanism for visual imagery, vital to the growth of normal thought patterns and to speech. Curiosity about things which do not lend themselves easily to examination by touch, and the ability to pick up information through the eyes of others are important products of such training.

Although an important training medium, the use of models in orientation or to aid in presenting other kinds of subject matter must be handled carefully. Caution should be taken not to substitute models for real objects which could be examined first hand; replicas and models are never entirely accurate, and often neglect to portray vital characteristics. Whenever their use is practical, models should always be made to scale or actual size. Where objects are too large or too small to permit this, the proportion must be exact and a description of true proportions must accompany the exposition.

Thorough early training in the making of all identifications is self-perpetuating: it fosters a spirit of inquiry which comes without this effort to the sighted child because of the vast number of impressions sight automatically gives him. Such early training also produces in the blind child and in the adult an informational background and interest patterns which are more complementary to those of sighted persons with whom life will be lived. And it assists in quick orientation to each new setting with a minimum of explanation or touching. These are the factors leading to social relationships in which blindness becomes truly incidental.

AN INSTITUTE FOR MOTHERS

ELSIE BRONSON

In Kansas the major responsibility for services to blind persons is invested in the Division of Services for the Blind. When, at a meeting of the State Association for the Blind in June, 1948, a discussion arose regarding the need for services to preschool blind children by means of an institute for the mothers, the state agency seemed the logical one to take the initiative in planning and to assume the expense. At the time of this meeting not more than five or six blind children under the age of five years were known to the interested group. There was reason to believe, however, that a state with a population of almost two million had many preschool children who would come under the definition of blindness and on this assumption a committee was appointed to do further planning for the institute. This committee consisted of members of the State Association for the Blind, staff members of the Division of Services for the Blind and a representative of the State School for the Blind. As the plan progressed, representatives of other agencies such as the Crippled Children's Commission, Child Welfare Division and the Children's Service League, and

Miss Elsie Bronson is case supervisor of services for the blind, Kansas State Department of Social Welfare.

the mother and father of a blind preschool child were invited to attend the meeting in an advisory capacity.

Reports were secured from five states where such institutes had been held. These reports were most helpful. Serious efforts were begun immediately to locate blind children and to interpret to the parents the purpose of the institute. Case finding was effected through the medium of local newspapers, radio broadcasts, and letters written to doctors, county welfare directors and other agencies that might be in a position to know of blind children. Only two blind children were located through the radio and newspaper publicity. One was reported by an ophthalmologist and one was referred by an ophthalmologist after inquiry was made regarding blind children he might know. The remainder were found by staff members during the year. By August 24, the date of the institute, fifteen children had been located and the parents interviewed. Not all of the mothers, however, were able to attend. No attempt was made to be selective, the only requirement being that the child must be within the definition of blindness, not feebleminded and not over five years of age. An ophthalmic report was secured as well as a statement from a doctor regarding the child's physical and mental condition.

Because of building plans at the State School for the Blind, it was impossible to hold the institute at the school, as had been done in other states, so it was decided to use the facilities offered by the State School for the Deaf where a similar institute for mothers of preschool deaf children was under consideration. These two institutes were held at the same time; the staff, mothers and children using the same dining room facilities. The original plan was for a ten-day institute but later the time was shortened to seven days which was, we felt, a wise decision. The general plan was a meeting with the institute leader in the morning and lectures by specialists in the afternoon, followed by nursery school demonstrations and individual conferences with the mothers. The institute leader discussed with the mothers techniques in training the blind child and encouraged questions regarding problems they were encountering with their children. The specialists included a pediatrician, an ophthalmologist, a psychiatrist and a nutritionist. On the program also was a teacher from the State School for the Blind who brought with her two young students. Four successful blind persons talked about the work they were doing or about their own childhood experiences. The institute was held in one wing of the school building with two mothers and two children sharing a dormitory room. The lectures and talks were held upstairs which proved to be an excellent idea since the mothers were undisturbed by the many nursery school problems that developed during their absence. The children were examined upon arrival by a pediatrician. A nurse was on duty at the infirmary during the week and a pediatrician from the State Board of Health was available part of the time. His observations were particularly helpful.

An attempt was made to set up as nearly as possible with limited equipment, a model nursery school. Toys were secured on loan from the American Foundation for the Blind, and tables, chairs and other nursery school equipment, including pushcarts, large and small blocks and some small musical instruments were borrowed or purchased. A trained and experienced nursery school teacher supervised the children while the mothers were in class, and conducted demonstrations. She had the assistance of one adult and several girl scout volunteers. Having the girl scouts proved to be a particularly happy idea. Their experience as baby sitters qualified them well for this type of work. They accepted the child's handicap casually and never seemed to be at a loss to know what to do in any situation. While one week was an extremely short time to do much constructive work with the

children, who ranged in age from one year to four and one half years, it was agreed at the end of the week that the attempt to give them new experiences through supervised play was very worth while. The children played both indoors and out and were encouraged to play with each other as well as with toys.

Ten mothers, one grandmother and one father attended the institute regularly. The father, who worked nights, sacrificed part of the time he would otherwise have slept in order to attend. The institute included a week end, and five other fathers were able to come to the Sunday meeting. Only eight children were in the nursery school. One was too young to be brought and another was thought by his mother to be too much of a problem to take away from home.

Little recreation was planned for the mothers but little seemed to be necessary with this particular group. They enjoyed playing with the children during the time they were not in classes, discussing mutual problems, reading recommended books and going to a movie occasionally in the evening. Ice box "raids" in the evening were invited by the housekeeper and enjoyed by all of the mothers.

Summing up the results of the institute, it seemed from the standpoint of staff members and parents that the positive factors far outweighed the negative ones. On the negative side was the problem of the wide range of ages in the small group which made progress in the nursery school doubly difficult. Staff members were impressed and perhaps more dismayed than the mothers by some of the behavior problems which the children were presenting, and the absence of a child psychologist on the staff was regretted. More playground equipment could have been used and a piano in the nursery would have been welcome.

On the positive side, the mothers as well as the fathers were unanimous in their feeling that they had secured much help from the institute leader and much worth-while information from the lectures. A questionnaire which was sent to them shortly after they returned home failed to elicit from the mothers any criticism, except, in one case the suggestion that more entertainment be furnished and that a five-day program with evening meetings might be more desirable than the less crowded seven days. All agreed that the institute should be planned with a Sunday meeting so the fathers could come. All wanted to return another year even though the program would be a similar one.

In addition to help given by classroom work and nursery school demonstrations there was another factor almost as important—the opportunity for the mothers to talk with other mothers who were struggling with the same problems. It was helpful for them to observe other blind children. In most cases the psychological effect was good and we believe that the mothers were all helped in the acceptance of their own child's handicap. They were particularly impressed as well as encouraged by the blind people who participated in the meetings, and the teacher from the State School for the Blind did much to relieve their fears about a residential school.

No tuition charge was made for the institute, since it was recognized that this might prevent some parents from attending. The overall cost was $729. Board and room for the mothers and children totalled $269 and the remainder was paid out in salaries, travel expenses and incidentals.

The agency plans follow-up work with the parents with particular emphasis on cases where the children were showing unusual problems. Continued effort will be made to find other blind children, and it is hoped that a larger group will be in attendance if the institute is held another year.

The Fortieth Biennial Convention of the American Association of Instructors of the Blind will be held at the Overbrook School for the Blind June 26-30, 1950. Further information will be supplied in a later issue.

NATIONAL REHABILITATION ASSOCIATION ANNUAL CONFERENCE

"Pushing Back Rehabilitation Horizons" was the theme of the annual conference of the National Rehabilitation Association which took place in San Antonio, Texas, November 6-10. Approximately 700 persons attended, representing various phases of rehabilitation work. The program gave special attention to discussions of counseling techniques and standards, and to a clarification of principles of rehabilitation. The Committee on Evaluative Criteria for Programs of Vocational Rehabilitation submitted a comprehensive report which has been printed and will be available in the near future to members of the association.

The conference showed great interest in a paper entitled "Needs and Developments in Psychological Research for the Blind" by Dr. Wilma Donohue, director of psychological services of the Institute for Human Adjustment, University of Michigan. Her paper is to appear in full in a forthcoming issue of the *Outlook*.

Mr. M. Robert Barnett, Executive Director, American Foundation for the Blind, as first speaker at the third general session of the conference, gave an address on "The Role of the Private Agency." The new director of the Foundation stressed his opinion that the private agency, whether national or local, must and should be the pioneer in research, the promoter of governmental interest in improvement of welfare services, the critic of existing agencies to assure full benefits under the law when its criticism can be constructive, and in many instances, the liaison between government and the individual. He stressed the importance of the role of the private agency in supplying legislative leaders with accurate and impersonal information in studies of possible government aid.

"Improving Programs for the Blind" was the subject for discussion at a special sectional meeting Wednesday afternoon. Mr. Burton Aycock, Director, Louisiana Division for the Blind and Sight Conservation, called attention to pending Federal legislation, such as HR 5077 which provides for an expansion of services for the blind, and HR 6000 which permits a state agency, in determining the need of a blind individual, to disregard up to $50 per month of earned income when this is found to encourage and promote the vocational rehabilitation of the blind. Mr. Aycock also made a plea for more extensive studies of rehabilitation services in the various states.

Julia Lawson, supervisor of home teachers and home industries, State Commission for the Blind, Austin, Texas, pointed out that home teaching and supervision of home industries should be considered a highly skilled profession which calls for special personal qualifications and good educational background.

Joseph F. Clunk, Services for the Blind, Office of Vocational Rehabilitation, Washington, D. C., spoke of Federal services and their relationship to state work for the blind, and suggested that ideas for service for the blind should originate within the state itself rather than be superimposed by the Federal agency.

Mr. Joseph V. Hunt, Chief, Administrative Standards Division, Office of Vocational Rehabilitation, was the last speaker on the program. Significant among his remarks was his appeal for intelligent personnel to meet the problem of counseling handicapped persons. He pointed out that counselors are assuming the responsibility of helping others to plan their lives, and he asserted that in order that this may be done wisely, "there is no place for an ignoramus in our profession."

Among those who attended the Texas Convention, there were numerous comments that they felt that the problems of the blind were given a gratifying share of attention.

NOTES FROM THE FOUNDATION LIBRARY

The items mentioned on this page may be borrowed without charge from the Reference Lending Library of the American Foundation for the Blind

Rehabilitation of the Handicapped, edited by William H. Soden, published by the Ronald Press, is a symposium of papers by experts on the subject, with a chapter, "Vocational Rehabilitation of the Blind" by Donald H. Dabelstein. The article gives an historical background, analyzes the development of the Federal-State program, and discusses the administration of rehabilitation services for the blind throughout the country.

"Trends and Developments in Work for the Blind" in the *Journal of Rehabilitation* for June, 1949, consists of four articles surveying the present situation. These contributions are: "Vocational Diagnosis and Training" by Harry J. Spar, "Urgent Need—A National Program of Research" by D. H. Dabelstein, "Some Fields That Need the Plow" by Berthold Lowenfeld, and "The Role of the Schools" by Gabriel Farrell.

"Services for the Blind in Arkansas" by Mattie Cal Maxted is a reprint from the *Arkansas Historical Quarterly*, Summer, 1949. Education of the blind originated in a small way in 1850. Since then, many agencies for the blind have been created, giving services of various kinds to blind children and adults of the state. The most recent service provided for the blind is the Vocational Adjustment Center, opened in 1947.

"Independence for the Blind," published in the *Industrial Bulletin* for October, 1949, describes the type of aid rendered the blind by the Vocational Rehabilitation Service of the New York State Department of Social Welfare through counseling, training and job placement.

In Beauty Like the Night by Lewis Arnold, recently published by Bobbs-Merrill Company, Indianapolis, is a new novel in which the hero is a young Englishman who lost his sight while in war service with the Royal Air Force.

"The Blind Child" by Ruth Morris Bakwin in the *Journal of Pediatrics*, July, 1945, is a contribution to that magazine's department of psychologic aspects of pediatrics. The article surveys the incidence and etiology of infantile and adolescent blindness, and discusses problems within the psychology and education of the blind, and care of the blind preschool child.

New Hope for the Handicapped, by Howard A. Rusk and Eugene J. Taylor, published by Harper & Brothers, New York, is a new edition of the book first published in 1946. There are many references to the rehabilitation of the blind.

John Milton, Englishman, by James Holly Hanford, a recent publication of Crown Publishers, is considered by the critics as one of the most definitive studies of the great English poet.

"Blind Hitchhiker," by Morton Sontheimer, in *Cosmopolitan* for March, 1949, is the story of Clarence Peddicord and his adventurous trip to New York for a corneal graft operation.

"A Blind Man Tells How He Sees" by Jacob Twersky, in *Science Digest* for October, 1949, introduces the author's philosophy as follows: "Because I feel that I can go anywhere I choose, I do not have to remember so often and so painfully that I am blind. The simple fact that I can go where I want to go when I want to go is a source of independence for me."

LETTERS TO THE EDITOR

Mr. Leopold Dubov
New York

Dear Sir:

The system of reading and writing invented by Louis Braille represents, in the history of humanity, one of the most beautiful and transcendental conquests realized by the ingenuity of man, since it not only liberated hundreds of persons deprived of sight from the spiritual shadows in which they lived, and opened to their activity and intelligence unsuspected horizons and perspectives, but also brought about the most efficient instrument for achieving social and economic service.

A benefit of such magnitude and transcendence is worthy of the perennial remembrance and the warm gratitude of sightless readers, and for this reason, making themselves interpreters of this sentiment, The Argentinian Commission for Homage to Louis Braille has consecrated the day of January 4th as "Braille Day," and invites you to take part in such a noble plan, presenting in this great city radial lectures and newspaper publications which disburse in all the social levels the personality and work of the singular Frenchman, the greatest benefactor of the blind of the entire world.

In the certainty of counting on your valuable participation.

Yours most sincerely,
Vicente J. B. Vercelli, Secretary

Institutions associated with the Commission:

The Fraternal, The Argentinian Library for the Blind, Roman Rosell Foundation, The Provincial Institute of Cordoba, Louis Braille, Argentinian Society for the Rights of the Blind, and The Organizing Commission of Voluntary Copyists of the School Clubs.

The Women's Conference of the
Society for Ethical Culture
2 West 64th Street
New York 23, N. Y.

Gentlemen:

For the past few years we have been making brailled greeting cards, which have met with enthusiastic reception.

We have cards for all occasions, such as Christmas, birthdays, anniversaries, get-well, friendship, thank you, Easter, Mother's Day, and St. Valentine's Day.

There is an attractive raised design on the outside of the card and an appropriate brailled greeting on the inside, with a printed translation directly under the brailled message.

We sell these cards at cost—ten cents each, including an envelope.

We are writing to inquire if it will be possible to include a notice in the next edition of your publication, advising your readers of our service. We believe this will be of great interest to them as there are very few sources of brailled greeting cards, and ours are outstanding in that they are individually and artistically drawn, painted and brailled. Thank you for your kind cooperation.

Sincerely,
Mrs. Eli U. Newburger
Braille Department

Mr. Leopold Dubov, executive vice-president of the Jewish Braille Institute of America passed on to us for the information of our readers the accompanying letter from Buenos Aires, Argentina. Mavis Kerschner, of the Institute, has given us an excellent translation.

THE SUGGESTION BOX

By the Technical Research Department

CHRISTMAS SHOPPING. Each year at this time it has seemed appropriate to list the tools and devices which might be useful for Christmas gifts. Formerly the list covered all the items handled by this department, but this time it has been necessary to omit some of the less likely items from the gift point of view. The items are grouped according to cost, to simplify shopping in different price brackets.

$1.00 or Under

Block Puzzle. Difficult but engaging.	$ .50
Checker Board, with round and square men	.25
Checker Board, with men. Pocket size	1.00
Goal. Elaborate tic-tac-toe	1.00
Brailled "Bicycle" cards. Bridge deck.	.50
Jumbo Cards. Large print characters.	.65
Rook. Old favorite, brailled	.60
Adjustable Slicer. With grater attachment	1.00
Aluminum Broil Racks. Nest of three.	1.00
Automatic Pancake Turner	.25
Can Opener, portable (Edlund Jr.)	.70
Coffee Dispenser. Measures by rounded tablespoonful	.60
E-Z-Lift Jar Opener. For pressure fit caps	.25
4-in-1 Measuring Spoons. All measures in one. Alone	.20
Ordered with other items	.10
Gas Stove Lighter. With four extra flints	.25
Hot-Lifter. Heavy grappling tongs	.50
Rotary Grater. For cheese, carrots, etc	.80
Safety Spoons. To clip on pots. Set of two	.95
Fishing Bob. Whistles at bite	.50
X-acto Pocket Knife. Two extra blades	.80
Key-Keeper. Pins in handbag	.60
Pipe Lighter. Similar to "Nimrod"	.80
Vestpok Razor. With 10 blades	1.00
Postal Scale. Hanging type	.90
Tape Measure (5 foot). Marked with staples	.60
Stitch Gauge. Similar tape with gauge	.75
SC-1 Self-centering Attachment. For center punch	1.00
Scotchlite Cane Coatings. White with red tip	.60
CVH Relievo Kit. For raised marking	1.00
Universal Ball-Point Pen	.75

Over $1.00, not over $2.50

Bottoms Up. With dice. Game	$ 1.25
Chess Set. Flocked and smooth men	2.50
Chinese Checkers, with board	2.00
Cribbage Board. Easily felt holes	2.25
Modern Michigan. With board, etc	1.75
Plastic brailled cards. Bridge or poker.	2.25
Pinochle	2.25
Canned Goods Markers. Kit	1.45
Cake Cutter. ("Kut-n-Serv")	1.55
Knife Sharpener. Rotary, with guides.	1.20
Omelet Pan. Folding. Light gauge aluminum	1.60
Purse Shopping Bag. Black	1.50
Speedy Chef Egg Beater. With stand.	1.75
Change-a-Blade Scissors	2.00
Hem Gauge. Marked scale	1.75
Thread-a-Matic Needle Threader	2.25
Outdoor Thermometer (−60° to 120°)	2.50
Magnagrip. Magnetic tool or knife holder	2.50
Miterite Saw Guide	1.75

Melodiscs. 6½ in. aluminum core blanks. 10 for 1.70
How to Make Good Recordings. Book 1.25
Brad pusher. Drives brads without hammer 1.25
Cast Aluminum Rule. Good to 1/16 in 1.50
C-12 Automatic Center Punch 1.50
C-15 Automatic Center Punch. Adjustable 2.25
C-16 Heavy Duty Center Punch. For hole punches 2.25
C-3 or C-4 Hole punching attachments. Each ..... .50
SC-19 Self-Centering Punch. For hanging hinges 2.25
Precision Pressure Lock Wrench 2.25
Saw Filing Guide. For cross-cut saws. 2.45
Tire Pressure Gauge. 4—50 lb. 2.00
Vertical Drill Positioner 1.50
Collapsible Lock-open Cane. Rubber grip 2.00
Collapsible Crook Handle Lock-open Cane 2.50
Dural Cane. Specify length 1.85
Paper Punch. Punches 2 or 3 holes. Adjustable 1.60

Over $2.50, not over $5.00

Baby Ben Clock. Brailled. Spring.... 4.25
G. E. Electric Clock. Alarm. Brailled. 4.00
Interval Timer, with bell:
Up to 30 minutes 3.00
30 to 60 minutes 3.00
Up to 60 seconds 3.50
Interval Timer, with switch:
Up to 30 minutes 4.75
30 to 60 minutes 4.75
Lock-Lid Saucepan. 3 qt. Lock-on lid for draining 3.25
Plasticanister and Measuring Cup... 3.00
Extra canisters 2.00
Slide Rule. Raised divisions 2.75
Flameless Cigaret Lighter 3.50
Morocco Wallet. Men's three-pocket. 3.25
Pinch Purse. Ladies', pigskin 4.00
Household Scale. Brailled. 25 lb..... 4.75
Oven or Candy Thermometer. 50°—500° 5.00
Sapphire Cutting Knives. Recording. 3.75
L. P. Sapphire Cutting Knives. Recording 3.75
Microphone. Crystal. Desk stand.... 4.50
Wood Marking Gauge. 1/16 in. grad. 3.50
Collapsible Feeler Cane 3.50
Magnifier, with light. 10X or 7X.... 4.25
Raised Line Drawing Kit. 4.00

Over $5.00, not over $10.00

Mirro-Matic Pressure Cooker. 4 qt.. 9.75
Adding Machine. 5 column 8.50
Electric Heating Pad.
207—BR 5.50
209—BR Moistproof 6.20
Diabetic Diet Scale. 500 grams..... 8.50
Insulin Syringe. Self-measuring..... 6.40
Barometer. Aneroid type. Brailled... 6.50
Liquid Thermometer. 25°-125°..... 5.25
Liquid Thermometer. 0-180°..... 5.25
Liquid Thermometer. 0-150°C..... 5.25
Meat Thermometer. 0-220°..... 5.75
Yellow Label Audio Recording Discs. 10 in.....10 for 5.40
Penscope, 6X Pocket telescope..... 8.00
Carpenters' Level. Ball type..... 6.00

Over $10.00

Selecto-Switch Electric Clock..... 11.30
With deaf-blind alarm attachment 19.30
Carrom Bagatelle. Hardwood veneer. 11.50
Mirro-Matic Pressure Cooker. 8 qt... 14.75
Liessens Music Writer. With braille instructions 12.50
Electric Metronome. Brailled..... 13.50
Bathroom Scale. Brailled. 300 lb. F.O.B., N. Y..... 13.75
Grocer's Scale. Brailled. Hanging. F.O.B., N. Y..... 55.00
Micrometer. Starrett 230. Adapted.. 22.00
Micrometer. Starrett 231. Adapted.. 25.75
Speed Soldering Iron. Quick heat.... 10.75

AP 4. All-Purpose Recording Machine. F.O.B., N. Y.	100.00
AP 4E. Same, equipped for embossing. F.O.B., N. Y.	115.00
10-in. Vinylite Embossing Discs. 100.	12.50
Record-changer, Recording Unit. 78 RPM. F.O.B., N. Y.	25.00
Recording Unit. Two-speed. F.O.B., N. Y.	19.00
TRC Model 3D Auditory Circuit Analyzer	55.00

THE MURRAH GIFT FUND of the Walter G. Holmes Foundation, in Georgia, is now in the final installment of its first year's operation. An assortment of items has been provided through this very useful fund, but a great many people, unfortunately, have had to be disappointed.

BOWLING RAILS. Some time ago, mention was made of a portable bowling rail which clamped to the ball return racks. At that time apparently the interest in bowling was much more limited than it is today, for there were no inquiries at all. Over the year or so since the article first appeared, many new groups have organized bowling teams, and more and more people have asked about portable rails.

In the process of investigating new alley designs, it was found that the newer alleys are not fitted to accommodate the early rail, but fortunately, just at that juncture, Mr. Bernard Krebs, of the New York Guild for the Jewish Blind, came up with what looks like an inspired solution, and his design, in addition, permits use of the rail on any alley, regardless of which side the balls return on. His idea was to use rubber-bottomed bases to hold the uprights, and to employ spare bowling balls to supply enough weight for rigidity.

By the time this appears, a model will have been tested, and possible disadvantages should have been overcome. The details have been worked out with a view to giving great flexibility as to rail lengths and heights. It is expected that the cost for a complete rail will not be much over $30 or $35. The rails are readily portable and can be set up rapidly and easily.

NEW COATING FOR HAND-COPIED BRAILLE. The Braille corps of the Denver Red Cross Chapter have found that Krylon, the plastic coating which has been featured recently in drugstores across the country, is far better than shellac for preserving hand transcribed braille. They report that it can be applied more swiftly, dries quicker and furnishes a softer reading surface. It may be applied by spraying, wiping or dipping and brushing, although the spray method seems best. It is available in pressure dispensers with Freon as the spray propellant. It may be secured in virtually all drugstores or may be purchased in bulk.

This department will welcome results of tests by individuals who may try it as a means of improving the life of card index systems, etc.

SEASON'S GREETINGS. For the fourth time it is the very real pleasure of the entire staff of the Technical Research Department to join in heartily wishing all its friends a Merry Christmas and a New Year full of hope and enterprise.

OUTLOOK
FOR THE BLIND
and
THE TEACHERS FORUM
15 West Sixteenth Street,
New York 11, New York

P. C. POTTS, PH.D.
Editor
EMILY J. KLINKHART
Circulation Manager

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BRAILLE EDITION - $1.00 PER ANNUM